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## The Flora of Pine Hollow, Dubuque County, Iowa

L. H. Pammel

*Iowa State College*

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## THE FLORA OF PINE HOLLOW, DUBUQUE COUNTY, IOWA

L. H. PAMMEL

Dr. B. Shimek called my attention to making a state park out of Pine Creek Hollow or Pine Hollow as it is called and Dr. Thomas H. Macbride<sup>1</sup> in his paper "Forestry Notes for Dubuque County"



Fig. 1. A view of one of the tributaries of the Pine Creek Hollow as seen from the county road three-fourths of a mile distant, gently sloping hill and thickly wooded valley. Photo by Fred Trenk.

makes this comment on the Pine Hollow area in northwestern Dubuque county: "In Dubuque county the people of Liberty, New Wine, and Concord townships, have at hand in Pine Hollow, a park, the gift of nature, which centuries of human effort might hardly produce. Here are deep shades, rocky walls, trees and shrubs of every species indigenous to the soil, bubbling springs, with abundant waters—what can we ask for more? Pine Hollow is today but a series of wood-lots owned by a hundred farmers. All it needs is judicious management, the building of a few bridges, with roads and paths and the communities of New Pine, Luxemburg, and Georgetown would have the most delightful park in northern Iowa. The region should belong to a corporation, to an association of the parishes, say, immediately adjoining. As the wood-lots, one by one, are offered for sale, they should be purchas-

<sup>1</sup> Rep. Ia. Geol. Survey 10: 627.

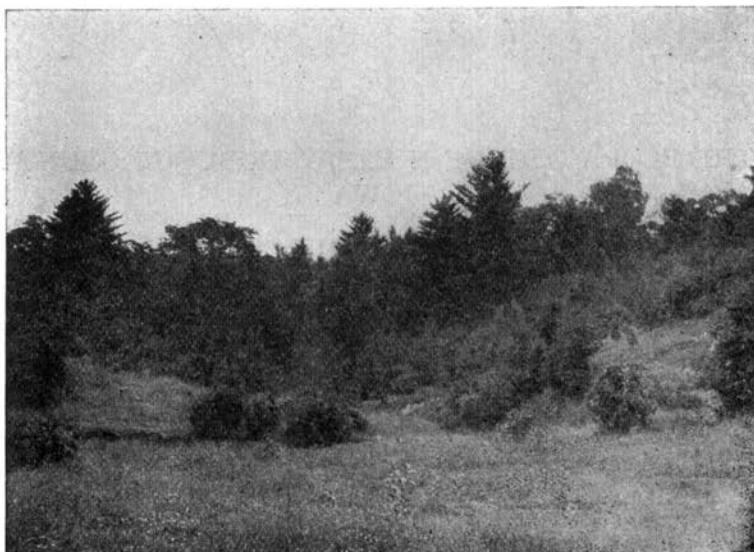


Fig. 2. Entrance to larger tributary valley of Pine Creek Hollow, where we see the first few white pines, which are more dense as one proceeds down the valley. This would probably be about the southern boundary of the proposed park. Young pines and deciduous trees in foreground. Photo by Fred Trenk.

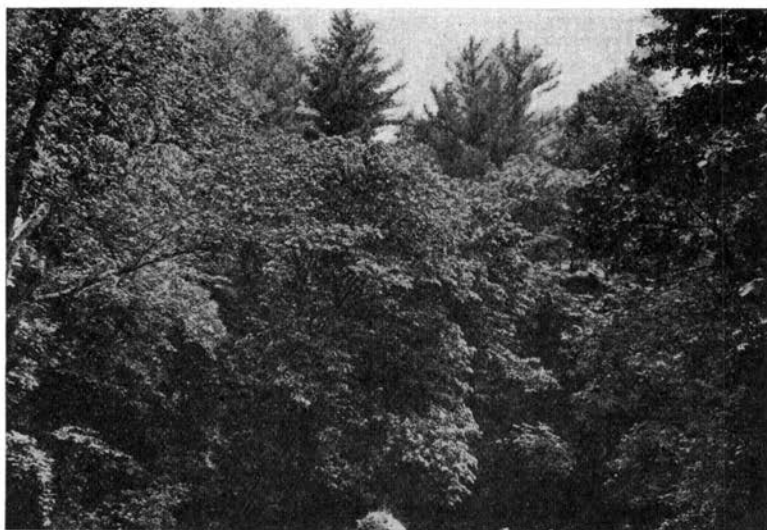


Fig. 3. Photo showing the white pine towering above the native hardwoods at Pine Creek Hollow. Photo by Fred Trenk.

ed by the corporation or parish even, that the forest as a whole be not destroyed piecemeal by thoughtless individual owners. If the whole valley were under one control the destruction caused by "wood-rats," timber-thieves, would be greatly lessened, if not entirely stopped, since means could be easily adopted to effectually exclude all depredators and trespassers.

"But it will be asked, what can be done for those sections of this county which, through thoughtlessness, have been exposed already to the destruction of the elements? What shall we do with that dry ravine, that rocky hilltop, that barren cliff? It was once wooded; now it produces nothing and mars the beauty of the farm; can it be redeemed? Of course the only hope lies in re-planting, reforestation. We must remember that nature spent ages in bringing about the condition of affairs which we have disturbed, and such is the peculiarity of our Iowa climate, that the



Fig.4. A narrow entrance into the main hollow of Pine Creek, Dubuque county.  
Photo by Fred Trenk.

re-establishment of wooded conditions anywhere with all our plans and skill is likely to be a matter of much difficulty. But it is feasible; it can be done. By means of planted groves forest conditions have been set up in central Kansas, and the same thing can therefore much more hopefully be attempted here, where the rainfall is so much greater. Trees in the places referred to are not likely to come up of themselves. Here and there, in time, such might be the case; but we must not wait for this. A tree



Fig. 5. A lone white pine apparently very old growing among the dense hardwoods. Photo by Fred Trenk.



Fig. 6. One of the larger native white pines at Pine Creek Hollow. Photo by Fred Trenk.

plantation must be established, protected summer and winter from the ravages of cattle, cared for as any other crop, if success is to be made sure."

In company with Mr. Fred Trenk, Prof. John Zimmerman and N. G. Malin, I made an investigation of this unique area in June, 1922. The area presented a series of surprises to me. Pine Hollow is situated in Liberty township, about fourteen miles in a northerly direction from Dyersville, about five miles north of New Vienna and near the town of Luxemburg. The Pine creek area embraces territory on three small streams; the most westerly stream is nearly one mile long and is branched; the eastern stream heads in Clayton county and flows south. One branch is in section 8 and another branch in section 9 of this township. The main stream, some four or five miles long, empties into the Little Turkey river; the general direction of the streams in Dubuque county is north—the several branches of the Maquoketa flows south or in a south-



Fig. 7. The narrow steplike ledges of limestone above the small creek joining Pine Creek Hollow. *Cystopteris bulbifera* growing in the rock. Photo by Fred Trenk.

west. The area lies north of the Maquoketa divide; the water of westerly direction. The divide of the sources of these streams is about 1100 feet in altitude. The whole region represents a floristic island.

The geology of the region was first described by McGee<sup>2</sup> "The Pleistocene History of Northeastern Iowa" and subsequently by Calvin and Bain<sup>3</sup> "Geology of Dubuque County." In a discussion of the Maquoketa shales and the fauna the authors say: "The fauna is essentially that of the Cincinnati shales of southwestern Ohio, and is not at all like that in the Graf and Hills mill section. *Plectambonites sericea*, *Orthis testudinaria* and *Ceraurus pleurexanthemus* were present at this area early in the Trenton; they seem to have disappeared from the region during the time represented by the later Galena and Lower Maquoketa; and then by migration they reoccupied these stations in Iowa, near the close of the Upper Maquoketa. The upper part of the Maquoketa, including the transition beds, is seen in the deep gorge known as Pine Hollow, in the northwest corner of the county, in Liberty township. The same beds, presenting the same characteristics, are seen at points along the Mississippi bluffs in the extreme southeastern part of

<sup>2</sup> U. S. Geological Survey 11: 199

<sup>3</sup> Iowa Geological Survey 10: 379.





Fig. 8. A rotten stump of old white pine which apparently grew on the very edge of a large limestone rock. The stump was nearly three feet in diameter. A younger white pine growing at the base seems to be doing very well in spite of the shallow soil. Photo by Fred Trenk.

the county, as well as in the hollows or gorges in the interior of Mosalem, the southeastern township." In a further discussion on the geology the statement is made: "Excepting the valley of Hollow creek—Pine Hollow, as it is frequently called—in the northwest corner of Liberty township, the western part of the county is covered with drift; and since no deep valleys have been excavated since the deposition of the drift, the comparatively few rock exposures of the region all belong to a single formation"\*\*\* "The upper part of the Maquoketa, including the transition beds, is seen in the deep gorge known as Pine Hollow"\*\*\*\* "The same beds presenting the same characteristics are seen at points along the Mississippi bluffs in the extreme southeastern part of the county, as well as in the hollows or gorges in the interior of Mosalem, the southeastern township."





Fig. 9. A view looking up one of the larger branches emptying into Pine Creek. Deciduous trees and shrubs line its banks. Photo by Fred Trenk.

The Silurian system may be seen in Pine creek as described by Professor Calvin. "The basal beds are seen at numerous points in the valleys of the Little Maquoketa and its branches; in the valley of Catfish creek; in Pine Hollow in the northwest corner of the county; and in numerous unnamed gorges and ravines in Mosalem and Table Mound townships."

The wooded area opens out on the rolling uplands, now farm lands, in former times in part original prairie with trees only on the slopes of hills, near the streams or narrow ridges leading to them, which are commonly referred to as hogbacks. There is an abundance of white pine (*Pinus strobus*) associated with such trees as large-toothed aspen (*Populus grandidentata*), white oak (*Quercus alba*), red oak (*Q. rubra*), quercitron oak (*Q. velutina*), bur oak (*Q. macrocarpa*), hickory (*Carya ovata*), swamp or black ash (*Fraxinus nigra*), ironwood (*Ostrya virginiana*), blue beech (*Carpinus caroliniana*), paper birch (*Betula papyrifera*), cherry or gray birch (*Betula lutea*), black walnut (*Juglans nigra*), and an abundance of butternut (*Juglans cinerea*), hard maples (*Acer saccharum* and *A. nigrum*). In the valley are the common box-elder (*Acer Negundo*), and some soft maple (*A. saccharinum*), a few cottonwood (*Populus deltoides*), green ash (*Fraxinus lanceolata*), hackberry (*Celtis occidentalis*), the black cherry (*Prunus virginiana*) and pin cherry (*Prunus pennsylvanica*). The Ameri-



Fig. 10. A close up view of one of the larger white pines on Pine Creek, tree probably a hundred years old. Professor John Zimmerman. Photo by Fred Trenk.

can plum (*Prunus americana*) and wild crab (*Pyrus ioensis*) are common on the hill sides. An occasional red cedar grows in the limestone rocks. The following willows are common in the area; almond-leaved willow (*Salix amygdaloides*), sandbar willow (*Salix fluviatilis*), black willow (*Salix nigra*) and pussy willow (*Salix discolor*). There are a good many unusual shrubs like the moosewood (*Dirca palustris*), alternate-leaved dogwood (*Cornus alternifolia*), silky-leaved dogwood (*Cornus circinata*), common dogwood (*Cornus candidissima*), common hazel (*Corylus americana*) and beaked hazel (*Corylus rostrata*) which is rare in Iowa. The southern buckthorn (*Rhamnus lanceolata*) is common in the valley under rocky ledges. Great masses of the Canadian yew (*Taxus canadensis*) cover some of the cooler east and north slopes,



Fig. 11. A view of a cluster of ninebark, entrance to Pine Creek Hollow. Timber largely removed. Photo by Fred Trenk.

and with it the northern buckthorn (*Rhamnus alnifolia*), a very rare plant in Iowa. The associates here are a fern (*Phegopteris Robertiana*), monkshood (*Aconitum noveboracense*), white violet (*Viola blanda*) and Hypnum moss. The soil here is cold. The cold current evidently comes out of the rock crevices which probably are connected with caves. In addition to the above enumerated plants I observed rue anemone (*Anemonella thalictroides*), wood betony (*Pedicularis canadensis*), oat grass (*Danthonia spicata*), parsnip (*Pimipinella integerrima*), Seneca snake-root (*Poly-*



Fig. 12. A close up view of some of the vegetation, Virginia creeper, basswood, dogwood, etc., which covers the large limestone rock in Pine Creek Hollow, with an open vista. Photo by Fred Trenk.



Fig. 13. In the foreground a large lone limestone talus rock well covered with small vegetation; Virginia creeper, gooseberry, walking-leaf fern, etc. Photo by Fred Trenk.

*galla Senega*), bastard toadflax (*Commandra umbellata*), yellow vetch (*Lathyrus ochroleucus*). In low moist woods grow the mandrake (*Podophyllum peltatum*), Jack-in-the-pulpit (*Arisaema triphyllum*), water-leaf (*Hydrophyllum virginicum* and *H. appendiculatum*), blue cohosh, (*Caulophyllum thalictoides*), rue anemone (*Isopyrum biternatum*), trillium (*Trillium grandiflorum*), cranes-bill (*Geranium maculatum*), spleenwort (*Asplenium felix-femina*),



Fig. 14. A view showing some of the ferns covering the limestone rocks in Pine Creek Hollow like the bladder fern and walking-leaf fern. Photo by Fred Trenk.

sensitive fern (*Onoclea sensibilis*), ostrich fern (*Onoclea Struthiopteris*) and bladder fern (*Cystopteris bulbifera*), yellow violet (*Viola pubescens*), blue violet (*Viola cucullata*), baneberry (*Actaea rubra*) and moonseed (*Menispermum canadense*). I collected the rare *Sullivantia ohionis*, which was growing in the limestone rocks, also the bellflower (*Campanula rotundifolia*) and bladder fern (*Cystopteris fragilis*), European strawberry (*Fragaria vesca* var. *americana*), meadow grass (*Poa* sp.) and *Ranunculus recurvatus*.

The area is unique because of the abundance of white pine, which shows splendid reproduction. Some of the older trees are three to three and one-half feet in diameter and perhaps 200 years old. Most of the larger trees have long since been cut.

Because the place is inaccessible it has not been spoiled by civilization. Some grazing is done in the main valley but the hill sides and especially the very rocky places have not been marred by grazing and hence the beauty of the place has been preserved. In the pastured valley I noticed a few plants like blue grass, smartweed and other immigrants. On the whole we have here primitive conditions. There are few other places in the state that compare with it in beauty and picturesqueness, although we find somewhat similar characteristics in the Red Rock region in Mahaska county, Eldora Pine Creek State Park in Hardin county, the big spring area in Allamakee county, Pine creek in Muscatine county and an area in Winneshiek county near Hesper, the Palisades in Linn county and the Ledges State Park in Boone county. Several of these places have been injured because of accessibility to the public.

#### CATALOGUE OF PLANTS

POLYPODIACEAE. \**Phegopteris Robertiana* (Hoffm.) A. Br., \**Adiantum pedatum* L., *Pteris aquilina* L., \**Pellaea atropurpurea* (L.) Link, \**Asplenium Filix-femina* (L.) Bernh., \**Camptosorus rhizophyllus* (L.) Link, \**Aspidium spinulosum* O. F. (Muller S. W.) var. *intermedium* Muhl., D. C. Eaton, \**Cystopteris fragilis* (L.) Bernh., \**Onoclea sensibilis* L., *Onoclea Struthiopteris* (L.) Hoffm.

OSMUNDACEAE. \**Osmunda Claytoniana* L.

EQUISETACEAE. \**Equisetum hyemale* L. var. *robustum* A. Br., A. Eaton.

TAXACEAE. *Taxus canadensis* Marsh.

PINACEAE. \**Pinus strobus* L., *Juniperus virginiana* L.

ALISMACEAE. *Sagittaria latifolia* Wild. *Alisma plantago-aquatica* L.

GRAMINACEAE. \**Panicum latifolium* L., *Echinochloa crus-galli* (L.) Beauv., *Leersia oryzoides* (L.) S. W., \**Phleum pratense* L., *Agrostis alba* L., \**Calamagrostis canadensis* (Michx.) Beauv., *Koeleria cristata* (L.)

Pers., \**Sphenopholis pallens* (Spreng) Scribn., \**Danthonia spicata* (L.) Beauv., \**Poa Wolfii* Scribn., *Poa pratensis* L., \**Glyceria nervata* (Willd.) Trin., \**Festuca nutans* Spreng., \**Festuca elatior* L., Dyersville, \**Bromus purgans* L., roadsides, \**Bromus inermis* Leys, highways, *Agropyron repens* (L.) Beauv., fields, *Hordeum jubatum* L., fields, *Elymus virginicus* L., *Hystrix patula* Moench.

CYPERACEAE. *Cyperus diandrus* Torr., *Eleocharis palustris* (L.) R. and S., *Scirpus atrovirens* Muhl., *Carex grisea* Wahlenb., *Carex vulpinoidea* Michx.

ARACEAE. \**Arisaema triphyllum* (L.) Schott.

COMMELINACEAE. *Tradescantia reflexa* Raf.

JUNCACEAE. \**Luzula campestris* (L.) DC.

LILIACEAE. *Uvularia grandiflora* Sm., *Erythronium albidum* Nutt., \**Smilacina racemosa* (L.) Desf., \**Trillium grandiflorum* (Michx.) Salisb., *Smilacina stellata* (L.) Desf., *Maianthemum canadense* Desf., *Smilax herbacea* L.

AMARYLLIDACEAE. *Hypoxis hirsuta* (L.) Coville.

IRIDACEAE. \**Belamcanda chinensis* (L.) DC., highways, *Sisyrinchium angustifolium* Mill.

SALICACEAE. *Salix nigra* Marsh., \**Salix amygdaloides* Anders., *Salix interior* Rowlee, \**Salix discolor* Muhl., \**Salix humilis* Marsh., \**Salix rostrata* Richards, \**Populus tremuloides* Michx., *Populus grandidentata* Michx., *Populus deltoides* Marsh.

JUGLANDACEAE. \**Juglans cinerea* L., *Juglans nigra* L., *Carya ovata* (Mill) K. Koch, *Carya cordiformis* (Wang.) K. Koch.

BETULACEAE. *Corylus americana* Wall., \**Corylus rostrata* Ait., *Ostrya virginiana* (Mill) K. Koch, *Carpinus caroliniana* Walt., \**Betula lutea* Michx., \**Betula papyrifera* Marsh.

FAGACEAE. \**Quercus alba* L., *Q. macrocarpa* Michx., *Q. Muhlenbergii* Engelm., *Q. rubra* L., *Q. velutina*.

ULMACEAE. *Ulmus fulva* Michx., *Ulmus americana* L., *Celtis occidentalis* L.

ARISTOLOCHIACEAE. *Asarum canadense* L.

POLYGONACEAE. \**Rumex mexicanus* Meisn., *Rumex acetosella* L.

CARYOPHYLLACEAE. \**Cerastium nutans* Raf., *Silene antirrhina* L.

PORTULACACEAE. *Claytonia virginica* L.

RANUNCULACEAE. *Ranunculus recurvatus* Poir., *Thalictrum dioicum* L., *Thalictrum dasycarpum* Fisch. and Lall., *Hepatica acutiloba* DC., \**Anemone canadensis* L., *A. cylindrica* Gray, \**Clematis verticillaris* DC., *Clematis virginiana* L., \**Aquilegia canadensis* L., \**Aconitum noveboracense* Gray, \**Actaea rubra* (Ait.) Willd.

MENISPERMACEAE. *Menispermum canadense* L.

BERBERIDACEAE. *Podophyllum peltatum* L., *Caulophyllum thalictroides* (L.) Michx.

PAPAVERACEAE. \**Sanguinaria canadensis* L.

FUMARIACEAE. \**Dicentra Cucullaria* (L.)

CRUCIFERAE. *Capsella bursa-pastoris* (L.) Medic. *Radicula palustris* (L.) Moench., *Dentaria diphylla* Michx., \**Arabis laevigata* (Muhl.) Poir.

\*Species are represented by specimens in herbarium.

SAXIFRAGACEAE. \*Sullivantia ohionis H. G., \*Heuchera hispida Pursh, Mitella diphylla L., \*Ribes cynosbati L., Ribes gracile Michx., \*Ribes floridum L'Her.

ROSACEAE. \*Physocarpus opulifolius (L.) Maxim., var. intermedius (Rydb.) Robinson, Pyrus ioensis (Wood) Bailey, \*Amelanchier spicata (Lam.) C. Koch, Crataegus mollis (H. G.) Scheele, \*C. macracantha, Lodd, \*Crataegus punctata, Jacq., Crataegus coccinea L., \*Fragaria virginiana Duchesne, \*Fragaria vesca L., var. americana Porter, \*Rubus idaeus var. aculeatissimus (C. A. Mey.) Regel and Tiling, Rubus occidentalis L., \*Rubus triflorus Richards, \*Rosa Woodsii Lindl., Prunus americana, Marsh, \*Prunus virginiana L., Prunus serotina Ehrh., Prunus pennsylvanica L.

LEGUMINOSAE. Trifolium pratense L. \*Trifolium hybridum L., escaped, Dyersville, Trifolium repens L., Trifolium pratense L. \*Amorpha canescens Pursh, Petalostemum purpureum (Vent.) Rydb., Petalostemum candidum Michx., Astragalus canadensis L., Desmodium nudiflorum (L.) DC., Desmodium Dillenii Darl., Lespedeza capitata Michx., Lathyrus ochroleucus Hood, \*Amphicarpa monoica (L.) Ell.

OXALIDACEAE. Oxalis violacea L.

GERANIACEAE. \*Geranium maculatum L.

RUTACEAE. Zanthoxylum americanum Mill.

EUPHORBIACEAE. Acalypha virginica L., Euphorbia maculata L.

ANACARDIACEAE. Rhus glabra L., Rhus Toxicodendron L.

CELASTRACEAE. \*Evonymus atropurpureus Jacq., Celastrus scandens L.

ACERACEAE. \*Acer nigrum Michx., \*Acer saccharum Marsh, Acer saccharinum L., Acer negundo L.

BALSAMINACEAE. Impatiens biflora Walt.

RHAMNACEAE. \*Rhamnus alnifolia L'Her, Rhamnus lanceolata Pursh, Ceanothus americanus L.

VITACEAE. Psedera vitacea (Knerr) Greene, \*Vitis vulpina L.

TILIACEAE. \*Tilia americana L.

CISTACEAE. Helianthemum majus B. S. P.

VIOLACEAE. Viola cucullata Ait., Viola blanda Willd., Viola pubescens Ait.

THYMELAEACEAE. \*Dirca palustris L.

ONAGRACEAE. Epilobium coloratum Muhl., Oenothera biennis L., Circaea lutetiana L.

ARALIACEAE. Aralia racemosa L., Aralia nudicaulis L.

UMBELLIFERAE. Sanicula marylandica L., \*Osmorrhiza longistylis (Torr.) DC., Cicuta maculata L., Zizia aurea (L.) Koch, Taenidia integririma L. Drude, Heracleum lanatum Michx.

CORNACEAE. \*Cornus circinata L'Her, \*Cornus amomum Mill, \*Cornus alternifolia L. f.

ERICACEAE. Pyrola elliptica Nutt.

PRIMULACEAE. Steironema ciliatum (L.) Raf.

OLEACEAE. \*Fraxinus lanceolata (Borkh.) Sargent, \*Fraxinus nigra (Marsh).

APOCYNACEAE. \*Apocynum androsaemifolium L.



ASCLEPIADACEAE. *Asclepias tuberosa* L., *Asclepias incarnata* L., *Asclepias syriaca* L., *Asclepias verticillata*, \**Acerates viridiflora* Ell.

CONVOLVULACEAE. *Convolvulus sepium* L.

POLEMONIACEAE. *Phlox divaricata* L., *Phlox pilosa* L.

HYDROPHYLLACEAE. \**Hydrophyllum virginianum* L., \**Hydrophyllum appendiculatum* Michx., *Ellisia Nyctalea* L.

BORAGINACEAE. *Lappula virginiana* (L.) Greene, *Mertensia virginica* (L.) Link, *Lithospermum canescens* (Michx.) Lehm.

VERBENACEAE. *Verbena urticaefolia* L., *Verbena hastata* L., *Verbena stricta* Vent. \**Verbena bracteosa*, Michx.

LABIATAE. *Teucrium canadense* L., *Scutellaria lateriflora* L., *Agastache scrophularioides* (Willd.) Ktze., *Prunella vulgaris* L., \**Hedeoma hispida* Pursh, *Pycnanthemum virginianum* (L.) Durand and Jackson, \**Nepeta Cataria* L., *Lycopus americanus* Muhl., *Mentha arvensis* L. var. *canadensis* (L.) Briquet.

SOLANACEAE. \**Physalis lanceolata* Michx.

SCROPHULARIACEAE. *Chelone glabra* L., *Veronica virginica* L., *Veronica americana* Schwein., *Pedicularis canadensis* L.

PLANTAGINACEAE. *Plantago major* L.

RUBIACEAE. *Galium aparine* L., \**Galium boreale* L., \**Galium trifidum* L.

CAPRIFOLIACEAE. \**Diervilla lonicera* Mill, \**Lonicera Sullivantii* Gray, *Lonicera dioica* L., *Symphoricarpos occidentalis* Hook, *Triosteum perfoliatum* L., \**Viburnum dentatum* L., *Viburnum Lentago* L., *Sambucus canadensis* L.

CAMPANULACEAE. *Campanula americana* (L.), \**Campanula rotundifolia* L.

LOBELIACEAE. *Lobelia syphilitica* L., *Lobelia spicata* Lam.

COMPOSITAE. *Veronica fasciculata* Michx., *Eupatorium purpureum* L. var. *maculatum* (L.) Darl., *Eupatorium perfoliatum* L., *Eupatorium urticaefolium* Reichard, *Solidago missouriensis* Nutt., *Solidago nemoralis* Ait., *Solidago serotina* Ait., *Aster novae-angliae* L., *Aster sericeus* Vent., *Aster sagittifolius* Wedemeyer, *Aster laevis* L., *Aster salicifolius* Ait., \**Aster multiflorus*, Ait., *Erigeron philadelphicus* L., *Erigeron canadensis* L., *Antennaria plantaginifolia* (L.) Richards, *Ambrosia artemisiacfolia* L., \**Heliopsis helianthoides* (L.) Sweet, \**Rudbeckia hirta* L., *Rudbeckia laciniata* L., *Brauneria angustifolia* (D. C.) Heller, *Lepachys pinnata* (Vent.) T. and G., *Helianthus strumosus* L., *Helianthus grosseserratus* Martens, *Coreopsis lanceolata* L., *Bidens frondosa* L., *Bidens vulgata* Greene, *Helenium autumnale* L., *Achillea Millefolium* L., \**Chrysanthemum Leucanthemum* L. var. *pinnatifidum* Lecq. and Lamotte, roadsides, Dyersville, \**Senecio Balsamitae* Muhl., *Arctium minus* Bernh., *Cirsium discolor* (Muhl.) Spreng, *Taraxacum officinale* Weber, *Lactuca canadensis* L., *Lactuca scariola* L. var. *integrata* Gren. and Godr., *Prenanthes alba* L., *Hieracium canadense* Michx.

DEPARTMENT OF BOTANY

IOWA STATE COLLEGE